CHAPTER 6

COCHINEAL IN PREHISTORIC AND HISTORIC TEXTILES

The Use of Cochineal In Weaving from Northern Mexico and New Mexico

From historic documents which recorded trade goods moving from the interior of Mexico through northern Mexico and up the Rio Grande drainage to Santa Fe, it has been learned that cochineal along with other Mexican dyes, such as logwood, indigo, and brazilwood, were frequent trade items. These dyes were used by the Spanish weavers of northern Mexico and Spanish, Pueblo, and Navaho weavers of New Mexico. Information about the use of cochineal by these weavers is obtained by written documents and the dye analysis of textiles woven during this historic period.

The finely woven Saltillo Sarape, woven during the colonial period of Spain, is outstanding in its weaving, distinctive design, and color. The blanket, woven in a number of weaving centers scattered throughout the vast arid regions of northern Mexico, was of such exceptional beauty that today they are highly prized by museums and collectors of Indian weaving. The Saltillo weavers may have come directly from Spain, bringing their knowledge of weaving with them, but these distinctive blankets reflect the influence of both the Navaho and Rio Grande weavers of New Mexico (Rodee 1987, p. 68).

In the early weaving of the Saltillo Sarape, one of the most commonly used red colors was cochineal. This has been substantiated by dye analysis which reveals cochineal present in the sarapes from the early nineteenth century to the late nineteenth century when aniline dyes came into use (Rodee 1987, p. 68).

Cochineal Dye Use in New Mexico

When the Spanish settled New Mexico, they imported dyes and other needed goods from colonial Mexico through the Chihuahua Trade Route. One caravan a year of ox-carts traveled five hundred miles across rugged and dangerous terrain northward from Chihuahua, Mexico, to Santa Fe, New Mexico. Items acquired in such a way were often scarce and expensive and Mexican dyes were no exception. After the opening of the Santa Fe Trail in 1822, the supply of dyes, including cochineal, increased. The arrival of the train in 1882 brought increased supplies for weaving, but it also brought aniline dyes. Aniline dyes reached the United States soon after they were discovered in 1856, but it was years before they were in common use, due to the Civil War (King 1985, p. 177).

One influence which increased supplies of cochineal coming into the New Mexico region was the decline of the European market. As the European demand for cochineal dwindled, more cochineal was diverted to the New Mexico market, where cochineal and natural dyes were still in use by the weavers. More cochineal was transported into New Mexico in the second quarter of the nineteenth century than ever before.

Evidence of the use of cochineal in weaving and embroideries, as well as for the sarapes in northern Mexico, is a justifiable criterion for assigning a probable date, between 1830 and 1870, to these items. This did not mean cochineal was not used before 1830, but that it was used in much smaller quantities and less frequently (Boyd 1974, p. 176). This forty-year period marks the height of the use of cochineal in New Mexico. After 1870, although cochineal was still available, it was replaced by packaged aniline dyes.

Cochineal remained costly throughout the colonial days and as a result comparatively little cochineal reached New Mexico except for the forty-year period between 1830-1870 (Boyd 1974, p. 176). Still cochineal, brazilwood, and indigo were in constant demand from the Chihuahua traders (Dickey 1949, p. 116), and were used in varying

amounts by the Navaho and Pueblo Indians, and the Spanish weavers of this province. While the weavers of New Mexico most commonly used indigo and brazilwood, also used were fustic, logwood, and cochineal (Brewster 1937, p. 11).

Cochineal was the most expensive of these dyes and not in common use, especially in the remote fringes of the Spanish territory (Amsden 1982, p. 88-89). An 1831 American dye journal reported the price per pound of cochineal as $5.00. This was twice the price of indigo, and quite a hefty price for the times compared to fustic and logwood, which were 6 cents per pound (Fisher 1979, p. 210). A less expensive red dye was brazilwood, and it was frequently used in place of cochineal. Brazilwood,.which came from the West Indies and tropical Americas, was imported and used in such quantities that billets of the dye two feet long (for this reason it was misnamed logwood) were transported on the backs of mules to the remote Spanish villages of the upper Rio Grande. Brazilwood was found so abundantly in South America that the huge country of Brazil was named after this dye (Robertson 1973, p. 73).

Pueblo Weavers

When the Spanish first explored New Mexico, they were impressed by the skill of the Pueblo Indian weavers, who wove cotton to make their clothing (Boyd 1974, p. 171). These Indians were already using dyes in pre-Spanish times, derived from various shrubs and herbs (Boyd 1974, p. 174). Indigo was one of the most important dyes employed by Pueblo weavers, but there is little mention of their use of cochineal (Fox 1978, p. 24). One unsubstantiated personal report states that cochineal dye was used by the Pueblo Indians at Acoma Pueblo in the 1740s. This may be true, but if cochineal was used by the Pueblo Indians, very little was used and only to dye their embroidery yarn.

The Pueblo Indian weavers usually acquired their red yarn, used chiefly for

embroidery, from unraveling commercial red cloth called bayeta. From 1750 to 1865, this cloth was dyed red with lac or cochineal (Kent 1983a, p. 29; Fisher and Wheat 1979, p. 199). Bayeta came from Mexico or was locally produced until 1825, after which almost all cloth came over the Santa Fe Trail. After 1865, bayeta was usually synthetic-dyed (Kent 1983a, p. 30).

Spanish Weavers and the Rio Grande Blanket

The Spanish weavers could be found in little communities in the Truchas Valley north of Santa Fe, in particular the village of Chimayo, where they are still weaving today. The hand-woven blankets were one of the most highly valued items in New Mexico (Dickey 1949, p. 112). The most common source of red dye was cochineal, which was obtained from Mexico until the Santa Fe Trail opened trade with the United States (Spillman 1977, p. 17). After that time, commercially dyed yarns were used. With the arrival of the railroad in 1880s, aniline dyes became available and were used (Spillman 1977, p. 16).

Cochineal has been found through the use of dye analysis in the early Rio Grande blankets. The red dye appeared mainly in imported, commercially-dyed, factory-spun yarn. Only the highest-quality blankets contained the cochineal-dyed yarn, and even in those instances it was used sparingly (Spillman 1979, p. 209).

Navaho Weavers

At the time of the arrival of the Spanish to New Mexico, the Navaho were not weavers. They learned weaving from the Pueblo Indians from the Rio Grande, who moved with them to the northwest part of New Mexico for refuge after the Pueblo Revolt in 1680. In the northwest part of New Mexico, there are Pueblo ruins and Navaho hogan rings combined in a number of refugee sites. These may have been the location where the

Navaho and Pueblo Indians were living closely together (Kent 1961, p. 5).

As the ancient Pueblo weaving art vanished, it became firmly established among the Navaho. While there is no evidence prior to 1700 that the Navaho were weavers, by 1706 the Navaho are described as owning woven clothing, and by the late 1700s they were well established as weavers (Kent 1961, p. 6). After the arrival of the Spanish, the Navaho became sheep herders and had an ample supply of wool. Unlike the Pueblo Indians who used cotton, the Navaho did their weaving with wool, a fiber very well suited to receive the animal dye cochineal.

The weaving of the Navaho was essentially Puebloan in character in the seventeenth and eighteenth centuries, but was influenced by the Spanish with regard to dyes, textile form, and up until 1860, in certain aspects of design. After 1860, influences from Anglo-Americans dominated, with new chemical dyes and commercial yarns being made available. The biggest influences on Navaho weaving came with the railroad in 1880 and the weaving supplies which it provided (Kent 1987, p. 17).

Red was obtained for weaving by unraveling red bayeta, which was in such demand that it was a stock item from the earliest days of Spanish trade until the American occupation. The bayeta, which was frequently dyed with cochineal, was loosely woven with rather course fibers which were easily pulled apart or unraveled. The resulting yarn was then used as part of the wefts and in this way became part of the Navaho blanket (Rodee 1987, p. 69). Because of the cost of bayeta, it is reasonable to assume that the Indians would have used less costly red dyes whenever possible. Cochineal and brazilwood, bought from traders and imported from Mexico, were sometimes used to produce red yarn as they were cheaper than bayeta cloth.

The unraveling of bayeta cloth is perhaps culturally connected to an earlier Navaho

ceremonial ritual in which occurred the unraveling of medicine bundles, and the rubbing or pulling of the ties and bundle contents across the body of the patient (Rodee 1987, p. 69; Richard 1974, p. 731-32). This may have established a cultural precedent for the rather unusual practice of pulling apart an object (Rodee 1987, p. 69).

When the railroad arrived in 1882, an increasing number of trading posts were established on and around the reservation. Within a few years, commercial materials, including aniline dyes, became readily available to all Navaho weavers. The presence of aniline dyes have been detected in Navaho textiles woven between 1880 and 1900 (Kent 1985, p. 40).

Cochineal Found in Ancient Textiles

A great deal is known about the use of cochineal in historical textiles. This is not true in prehistoric textiles, which must be submitted to dye analysis to determine the dyes used. Frequently, dye analysis is conducted on archaeological textiles, with some surprising results.

Dyed Textiles in the Bar Kochba Cave

In 1960, a large number of dyed textiles along with one ball of unused yarn were discovered in the arid region of the Judean Desert in the Bar Kochba Cave. In this cave, followers of Simon Bar Kochba, who was leading a revolt against the Romans, were hiding, and they slowly starved to death. The textiles that remained were found to be 1,800 years old. The most interesting results of this study came from the dye testing of the ball of unused yarn found in a bag in the cave. While the yarn was purple in color, it was not dyed with Tyrian purple (a rare and expensive dye), but was faked by mixing Armenian cochineal with indigo. Analysis of the textiles were positive for alizarin, indigo, Armenian cochineal, weld and saffron (Abrahams and Edelstein 1964, p. 19-20).

Discoveries from the Ararat Valley

Recent discoveries have found that by 700 B.C., the Assyrians from the Ararat Valley and adjacent areas were using a form of cochineal, which was being produced in the Armenian mountains. The ancient Jews also used this dye. Armenian cochineal is chemically very similar to American cochineal, and it is hard to distinguish the two dyes by analysis (Robinson 1969, p. 25).

Textiles from Guatemala and Peru

In the last fifty years, dye analysis has been carried out on a number of textiles from Guatemala, Peru, and their neighboring countries. In this way much has been learned, especially about Peruvian textiles. As test procedures improve and smaller sample sizes are needed, this form of inquiry has become frequently employed to determine the types of dyes used by the prehistoric people of these regions.

Cochineal in Textiles from Guatemala

The value of dye analysis to historical accuracy can be demonstrated with the analysis of mid-nineteenth century, red cotton Guatemalan textiles. It was assumed that these samples had been dyed with cochineal, because at that period in time Guatemala was the world's largest producer of cochineal. Yet, without exception, analysis of the red cotton yarns dating from 1875 to 1925 gave a spectrum for madder. Madder had never been mentioned in the literature. Further analysis found the dye to be the synthetic dye alizarin. There was no cochineal present in the cotton samples (Carlsen and Wenger 1991, p. 19-20).

Silk was commonly dyed with cochineal, and is fairly common in ethnographic Guatemalan textiles. In a collections of silk from the 1880s, cochineal was found in four of the five samples. Of eleven samples taken from the turn of the century, only three contained cochineal. Samples from 1919 to 1935, found one-fourth positive for cochineal.

All of the cochineal positive samples came from the town of Quetzaltenango, which indicates a local source (Carlsen and Wenger 1991, p. 24-26).

Dyes found in Peruvian Textiles

Evidence of the presence of cochineal in textile fragments has been found in burial sites in Pre-Incas, Peru (Fester 1954, p. 243). Textiles of the Nazca and Chimu periods (see Table 1; Fester 1954, p. 238-244) have been found to contain cochineal by spectroscopic analysis. Dyes present in textiles belonging to the Peruvian Paracas culture from 7th century B.C. were studied by spectroscopic analysis. Cochineal was suspected, but relbunium was found along with indigo.

In the Chavina region of Peru in 1943, a rapidly conducted excavation by lay archaeologists retrieved 13 textiles which were later analyzed. This analysis revealed cochineal and indigo in some of the samples (Lothrop and Mahler 1957, p. 53-54).

A study conducted by Max Saltzman, A. M. Keay, and Jack Christensen in 1966 examined 18 samples of Pre-Columbian, Peruvian textiles (three were dated between 400 B.C. and 100 A.D.). They determined that the dye used was obtained from the shell fish Purpura patula pansa. This dye, secreted from this shellfish, is identical to the dye found in the Mediterranean, the famous Tyrian purple. This was the first analytical proof of the use of shellfish dye in Pre-Columbian Peruvian fabrics. Twelve red Peruvian textile samples analyzed positive for cochineal, confirming the 1934 work of G. Tagliani and A. Wiazmitinow reported in "Old Peruvian Dyed Textiles" (Saltzman et al. 1963, p. 241-251).

A study carried out on sixth and seventh century Tiahaunaca dyed textiles, and thirteenth and fourteenth century Chancay culture dyed textiles revealed cochineal, indigo, and probably logwood. The identification was made by means of absorption spectroscopy and chromatographic analysis (Kashiwagi 1976, p. 1235).

In a study of Peruvian textiles reported by Saltzman in 1977, the dyes indigo, cochineal, and shellfish purple were found. Similar to the 1954 test conducted by Fester,

this study was unable to find cochineal present in textiles from early Paracas culture, while cochineal had been found in the textiles of this same culture from a later date. Saltzman also reported finding cochineal in Nazca and Moche textiles (200-500 A.D.). This raises the interesting question of when and how cochineal came into use by the Paracas (Saltzman 1977, p. 172).